

WHAT IS CLAIMED IS:

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1. A management mediating device:
comprising:

management system communication means for
making a connection to a management system outside a
10 fire wall from inside the fire wall, and receiving a
command from the management system;

processing means for performing a process in
accordance with the received command;

management object system communication means
15 for transferring the command to a management object
system;

storing means for storing a connection
schedule of the management system communication
means; and

20 instructing means for, in accordance with
the connection schedule, instructing the management
system communication means to make a connection to
the management system.

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2. The management mediating device
according to claim 1, wherein in accordance with the
5 connection schedule, the instructing means provides
to the management system communication means at least
one of:

- 1) an instruction of making a connection to
the management system at a specified date and time;
- 10 2) an instruction of making a connection to
the management system at a specified time every day;
- 3) an instruction of making a connection to
the management system at a specified date and time
every month;
- 15 4) an instruction of making a connection to
the management system in a specified period at
intervals of a specified value;
- 5) an instruction of making a connection to
the management system in a specified period at
20 intervals of a specified value every day; and
- 6) an instruction of making a connection to
the management system from a specified date and time
at intervals of a specified value for an indefinite
period.

3. The management mediating device

5 according to claim 1, wherein the connection schedule includes a start date and time, an end date and time, and a value of an interval, and in accordance with the connection schedule, the instructing means provides to the management system at least one of:

10 1) when only the start date and time is specified, an instruction of making a connection to the management system at the specified start date and time;

2) when only a start time of the start date and time is specified, an instruction of making a connection to the management system at the start time every day;

3) when only the start date and time is specified, and a month of the start date and time is not specified, an instruction of making a connection to the management system at the start date and time every month;

4) when all of the start date and time, the end date and time, and the value of the interval, an instruction of making a connection to the management

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system from the start date and time to the end date and time at intervals of the value;

5 5) when all of the start date and time, the end date and time, and the value of the interval are specified, and only the start time and the end time of the start date and time and the end date and time are specified, an instruction of making a connection to the management system from the start time to the end time at intervals of the value every day; and

10 6) when the start date and time and the value of the interval are specified, and the end date and time is not specified, an instruction of making a connection to the management system from the start date and time for an indefinite period.

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4. The management mediating device
20 according to claim 1, wherein the processing means has a schedule changing function of changing the connection schedule stored in the storing means in accordance with the command.

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5. The management mediating device
according to claim 4, wherein when the command is a
5 schedule adding command, the processing means adds an
additional connection schedule to the connection
schedule stored in the storing means, the additional
connection schedule being attached to the schedule
adding command.

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6. The management mediating device
15 according to claim 4, wherein the connection schedule
is constituted by a plurality of unit schedules, and
an identifier is attached to each of the unit
schedule,

when the command is a schedule deleting
20 command, the processing means searches the storing
means to find the unit schedule corresponding to the
identifier attached to the schedule deleting command,
and deletes the found unit schedule.

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7. The management mediating device
according to claim 4, wherein the command is an all
5 schedule changing command, the processing means
extracts an Internet address attached to the all
schedule changing command, causes the management
system communication means to obtain a new connection
schedule existing at the Internet address, and
10 replaces the connection schedule stored in the
storing means with the new connection schedule.

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8. The management mediating device
according to claim 4, wherein when the command is a
schedule requiring command, the processing means
reads the connection schedule from the storing means,
20 and causes the management system communication means
to provide the connection schedule to the management
system.

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9, The management mediating device
according to claim 1, wherein the management system
communication means has a SOAP processing function of
5 making communication with the management system based
on SOAP.

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10. A management mediating program that is
used for a management mediating device, wherein the
management mediating device includes first
communication means, processing means, second
15 communication means, storing means that stores a
connection schedule, and instructing means,

the management mediating program comprising:

a first communication program code of
causing the first communication means to make a
20 connection to a management system via the Internet,
and to receive a command from the management system,
wherein the management mediating device is positioned
at an inside of a fire wall, and the management
system is positioned at an outside of the fire wall;
25 a processing program code of causing the

processing means to perform a process in accordance with the command;

a second communication program code of causing the second communication means to transfer
5 the command to a management object system; and

an instructing program code of, in accordance with the connection schedule, causing the instructing means to provide to the first communication an instruction of making a connection
10 to the management system.

15 11. A computer readable storing medium that stores a management mediating program that is used for a management mediating device, wherein the management mediating device includes first communication means, processing means, second
20 communication means, storing means that stores a connection schedule, and instructing means,
the management mediating program comprising:
a first communication program code of causing the first communication means to make a
25 connection to a management system via the Internet,

and to receive a command from the management system,
wherein the management mediating device is positioned
at an inside of a fire wall, and the management
system is positioned at an outside of the fire wall;

5 a processing program code of causing the
processing means to perform a process in accordance
with the command;

 a second communication program code of
causing the second communication means to transfer
10 the command to a management object system; and

 an instructing program code of, in
accordance with the connection schedule, causing the
instructing means to provide to the first
communication an instruction of making a connection
15 to the management system.

20 12. An image processing apparatus that
comprises a hardware resource including at least one
of a displaying unit, a printing unit, a scanner unit,
a facsimile unit, a hard disk, an imaging unit and a
network interface, and provides a service including
25 at least one of a printing service, a copying service,

and a facsimile service,

the image processing apparatus further
comprising:

at least one application that performs a
5 particular process for the service;

management system communication means for
making a connection to a management system from an
inside of a fire wall, and receiving a command from
the management system positioned at an outside of the
10 fire wall;

processing means for performing a process in
accordance with the command;

storing means for storing a connection
schedule of the management system communication
15 means; and

instructing means for, in accordance with
the connection schedule, instructing the management
system communication means to make a connection to
the management system.

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13. The image processing apparatus
25 according to claim 12, wherein in accordance with the

connection schedule, the instructing means provides to the management system communication means at least one of:

1) an instruction of making a connection to
5 the management system at a specified date and time;

2) an instruction of making a connection to the management system at a specified time every day;

3) an instruction of making a connection to the management system at a specified date and time
10 every month;

4) an instruction of making a connection to the management system in a specified period at intervals of a specified value;

5) an instruction of making a connection to
15 the management system in a specified period at intervals of a specified value every day; and

6) an instruction of making a connection to the management system from a specified date and time at intervals of a specified value for an indefinite
20 period.

25 14. The image processing apparatus

according to claim 12, wherein the connection
schedule includes a start date and time, an end date
and time, and a value of an interval, and in
accordance with the connection schedule, the
5 instructing means provides to the management system
at least one of:

1) when only the start date and time is
specified, an instruction of making a connection to
the management system at the specified start date and
10 time;

2) when only a start time of the start date
and time is specified, an instruction of making a
connection to the management system at the start time
every day;

15 3) when only the start date and time is
specified, and a month of the start date and time is
not specified, an instruction of making a connection
to the management system at the start date and time
every month;

20 4) when all of the start date and time, the
end date and time, and the value of the interval, an
instruction of making a connection to the management
system from the start date and time to the end date
and time at intervals of the value;

25 5) when all of the start date and time, the

end date and time, and the value of the interval are specified, and only the start time and the end time of the start date and time and the end date and time are specified, an instruction of making a connection
5 to the management system from the start time to the end time at intervals of the value every day; and

6) when the start date and time and the value of the interval are specified, and the end date and time is not specified, an instruction of making a
10 connection to the management system from the start date and time for an indefinite period.

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15. The image processing apparatus according to claim 12, wherein the processing means has a schedule changing function of changing the connection schedule stored in the storing means in
20 accordance with the command.

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16. The image processing apparatus

according to claim 15, wherein when the command is a
schedule adding command, the processing means adds an
additional connection schedule to the connection
schedule stored in the storing means, the additional
5 connection schedule being attached to the schedule
adding command.

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17. The image processing apparatus
according to claim 15, wherein the connection
schedule is constituted by a plurality of unit
schedules, and an identifier is attached to each of
15 the unit schedule,

when the command is a schedule deleting
command, the processing means searches the storing
means to find the unit schedule corresponding to the
identifier attached to the schedule deleting command,
20 and deletes the found unit schedule.

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18. The image processing apparatus

according to claim 15, wherein the command is an all
schedule changing command, the processing means
extracts an Internet address attached to the all
schedule changing command, causes the management
5 system communication means to obtain a new connection
schedule existing at the Internet address, and
replaces the connection schedule stored in the
storing means with the new connection schedule.

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19. The image processing apparatus
according to claim 15, wherein when the command is a
15 schedule requiring command, the processing means
reads the connection schedule from the storing means,
and causes the management system communication means
to provide the connection schedule to the management
system.

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20. The image processing apparatus
25 according to claim 12, wherein the management system

communication means has a SOAP processing function of making communication with the management system based on SOAP.

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21. A management mediating program that is executed in an image processing apparatus in cooperation with at least one application that manages or controls a hardware resource,

wherein the hardware resource includes at least one of a displaying unit, a printing unit, a scanner unit, a facsimile unit, a hard disk, an imaging unit and a network interface, and the image processing apparatus provides a service including at least one of a printing service, a copying service, and a facsimile service,

the at least one application performs a particular process for the service,

the image processing apparatus comprises first communication means, processing means, storing means that stores a connection schedule, and instructing means,

and the management mediating program

comprises:

a first communication program code of causing the first communication means to make a connection to a management system via the Internet,
5 and to receive a command from the management system, wherein the management mediating device is positioned at an inside of a fire wall, and the management system is positioned at an outside of the fire wall;

a processing program code of causing the
10 processing means to perform a process in accordance with the command;

a second communication program code of causing the second communication means to transfer the command to a management object system; and

15 an instructing program code of, in accordance with the connection schedule, causing the instructing means to provide to the first communication an instruction of making a connection to the management system.

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22. A computer readable storing means that stores a management mediating program that is executed in an image processing apparatus in cooperation with at least one application that
25 manages or controls a hardware resource,

wherein the hardware resource includes at least one of a displaying unit, a printing unit, a scanner unit, a facsimile unit, a hard disk, an imaging unit and a network interface, and the image
5 processing apparatus provides a service including at least one of a printing service, a copying service, and a facsimile service,

the at least one application performs a particular process for the service,

10 the image processing apparatus comprises first communication means, processing means, storing means that stores a connection schedule, and instructing means,

and the management mediating program
15 comprises:

a first communication program code of causing the first communication means to make a connection to a management system via the Internet, and to receive a command from the management system,
20 wherein the management mediating device is positioned at an inside of a fire wall, and the management system is positioned at an outside of the fire wall;

a processing program code of causing the processing means to perform a process in accordance
25 with the command;

a second communication program code of causing the second communication means to transfer the command to a management object system; and

an instructing program code of, in
5 accordance with the connection schedule, causing the instructing means to provide to the first communication an instruction of making a connection to the management system.

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23. A remote management system in which a management object system is managed by communication
15 between a management system and a management mediating device,

wherein the management mediating device comprises:

management system communication means for
20 making a connection to the management system outside a fire wall from inside the fire wall, and receiving a command from the management system;

processing means for performing a process in accordance with the received command;

25 management object system communication means

for transferring the command to a management object system;

storing means for storing a connection schedule of the management system communication

5 means; and

instructing means for, in accordance with the connection schedule, instructing the management system communication means to make a connection to the management system,

10 and wherein the processing means changes the connection schedule stored in the storing means in accordance with a schedule changing command received from the management system.

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24. A remote management method of managing a management object system by communication between a management mediating device and a management system, the method comprising the steps of:

- 20 a) making a connection, via the Internet, from inside a fire wall to the management system outside the fire wall;
- 25 b) receiving a command from the management

system by using the connection;

c) performing a process in accordance with the command;

d) transferring the command to a management
5 object system;

e) storing a connection schedule;

f) providing an instruction so that at the step a), the connection is made in accordance with the connection schedule; and

10 g) when the command is a schedule changing command, changing the stored connection schedule in accordance with the schedule changing command.

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